LAB NO. 2014-933-6

DATE REC'D 08/06/14

DATE SAMPLED --------

SAMPLED BY Client

STANDARD LABORATORIES, INC.

1530 N. Cullen Avenue
Evansville, IN 47715

ABBOTT FUEL

MANITOWOC PUBLIC UTILITIES
P.O. BOX 1090
MANITOWOC, WI 54221
ATTN: TOM REED

SAMPLE IDENTIFICATION

BERY 2014-8-2 T
08/02/14

DATE REPORTED: 08/21/14

	% MOISTURE	% ASH	% VOLATILE	% FIXED CARBON	BTU/LBS	% SULFUR
AS REC'D	8.70	12.74	XXXX	XXXX	11437	0.63
DRY BASIS	------	13.95	XXXX	XXXX	12527	0.69
M-A-FREE					14558	

LBS SO2 / MMBTU: 1.10

Beryllium, ug/g dry basis: 3.1

NOTE: XXXX INDICATES ANALYSIS WAS NOT REQUESTED

Respectfully Submitted

FORM # 21

MPU04745

RECEIVED
SEP 15 20
Manitowoc Public Utilities

STANDARD LABORATORIES, INC.

1530 N. Cullen Avenue
Evansville, IN 47715

LAB NO. 2014-933-12

DATE REC'D 08/13/14

DATE SAMPLED --------

SAMPLED BY Client

MANITOWOC PUBLIC UTILITIES
P.O. BOX 1090
MANITOWOC, WI 54221
ATTN: TOM REED

SAMPLE IDENTIFICATION

BERY 2014-8-9 A-T
08/09/14

DATE REPORTED: 09/12/14

Beryllium, ug/g dry basis: 3.4

Respectfully Submitted

FORM # 21

SGS

Analysis Report

~1000 TONS

July 07, 2014

KCBX TERMINAL
3259 EAST 100TH STREET
CHICAGO IL 60617

ATTN: PETE ROTUNDO

Client Sample ID:	2	Sample ID By:	KCBX Terminals
Date Sampled:	N/A	Sample Taken At:	-----
Date Received:	Jun 27, 2014	Sample Taken By:	-----
Product Description:	COAL		
Comments:	PREVIOUSLY REPORTED AS JOB 1478638-002		

SGS Minerals Sample ID: 491-1479683-001

	Method	As Received	Dry	DAF
Moisture, Total %	ASTM D3302	7.65		
Ash %	ASTM D3174/D7582	17.45	18.89	
Volatile Matter %	ASTM D3175/D7582	33.99	36.81	
Fixed Carbon %	ASTM D3172 (by diff)	40.91	44.30	
Sulfur %	ASTM D4239 (A)	0.51	0.55	
Gross Calorific Value Btu/lb	ASTM D5865	10342	11199	13807
Chlorine, CL %	ASTM D4208	0.16	0.17	
Mercury, Hg µg/g	ASTM D6722	0.05	0.05	

Samples for Ash are analyzed by either D7582 or D3174 depending on what equipment is available. For details on which method was utilized, request information from SGS South Holland.

Samples for Volatile Matter are analyzed by either D7582 or D3175 depending on what equipment is available. For details on which method was utilized, request information from SGS South Holland.

Tests	Result	Unit	Method
FUSION TEMPERATURE OF ASH, REDUCING			
Initial Deformation	2380	°F	ASTM D1857
Softening	2400	°F	ASTM D1857
Hemispherical	2410	°F	ASTM D1857
Fluid	2430	°F	ASTM D1857

James P. Nelson
Great Lakes Operations Manager

SGS North America Inc. | Minerals Services Division
16130 Van Drunen Road South Holland IL 60473 t (708) 331-2900 f (708) 333-3060 www.sgs.com/minerals

SGS

Analysis Report

July 07, 2014

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3259 EAST 100TH STREET
CHICAGO IL 60617

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Date Received:	Jun 27, 2014	Sample Taken By:	-----
Product Description:	COAL		
Comments:	PREVIOUSLY REPORTED AS JOB 1478638-002		

SGS Minerals Sample ID: 491-1479683-001

Tests	Result	Unit	Method
ANALYSIS OF ASH			
Basis	IGNITED	---	ASTM D4326
Silicon Dioxide, SiO2	30.11	%	ASTM D4326
Aluminum Oxide, Al2O3	9.67	%	ASTM D4326
Titanium Dioxide, TiO2	0.58	%	ASTM D4326
Iron Oxide, Fe2O3	3.71	%	ASTM D4326
Calcium Oxide, CaO	28.97	%	ASTM D4326
Magnesium Oxide, MgO	18.88	%	ASTM D4326
Potassium Oxide, K2O	1.24	%	ASTM D4326
Sodium Oxide, Na2O	0.42	%	ASTM D4326
Sulfur Trioxide, SO3	6.17	%	ASTM D5016
Phosphorus Pentoxide, P2O5	0.06	%	ASTM D4326
Strontium Oxide, SrO	0.06	%	ASTM D4326
Barium Oxide, BaO	0.05	%	ASTM D4326
Manganese Oxide, MnO2	0.08	%	ASTM D4326
Undetermined	0.00	%	
Sum of Oxides	100.00	%	
Silica Value	36.87	---	
Base Acid Ratio	1.32	---	
T250 Temperature	2534	°F	
Fouling Index	0.42	---	
Slagging Index	>100.00	---	
Type of Ash	LIGNITIC	---	

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SGS

Analysis Report

July 07, 2014

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SGS Minerals Sample ID: 491-1479683-001

Tests	Result	Unit	Method
TRACE ELEMENTS BY ICP			
Antimony, Sb	<3	µg/g	ASTM D6357
Beryllium, Be	3.5	µg/g	ASTM D6357
Cadmium, Cd	<0.6	µg/g	ASTM D6357
Chromium, Cr	13	µg/g	ASTM D6357
Cobalt, Co - Dissolved	7	µg/g	ASTM D6357
Manganese, Mn	106	µg/g	ASTM D6357
Silver, Ag	<0.6	µg/g	ASTM D6357
Strontium, Sr	80	µg/g	ASTM D6357
Vanadium, V	19	µg/g	ASTM D6357

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